Preventing Perinatal HIV in New York City: A 20-Year Public Health Perspective

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The number of perinatally acquired AIDS cases reported in New York City by year of birth has declined dramatically from a peak of 176 cases in 1990 to 1 case in the 1999 birth cohort. This decline is attributable to:

- lowering of HIV transmission rate,
- fewer HIV-infected women giving birth, and
- delay in AIDS due to improvement in medical therapy.

Trends in Perinatal HIV in NYC

The New York City Department of Health has monitored HIV-exposed infants since 1989 at 22 pediatric HIV care sites through the Pediatric Spectrum of HIV Disease (PSD) study and through its HIV/AIDS surveillance system. The New York State Department of Health has collected supplemental data on HIV-exposed infants since 1996.

The New York State Department of Health has monitored HIV positivity of newborns through heelstick testing since 1988:

—1988-96:	Blinded serosurvey
—1996:	Serosurvey results offered, majority of mothers received results
— 1997-00:	Universal linked testing of newborns (with supplemental data collection).

In August 1999, a rapid testing program began. A rapid test was offered to women presenting in labor who had no documented HIV test result. It was mandatory for the infants of women who declined the rapid test for themselves.

Data collected by NYC (since 1989) and by NYS (since 1996) include: HIV infection status of HIV-exposed newborns; prenatal care; prescription of ZDV and other ARVs prenatally, intrapartum, and

neonatally; mode of delivery; and maternal risk factors. These data indicate that the number of HIV-positive pregnant women delivering in New York City has declined from more than 1500 in 1991 to 770 in 1999 and that the estimated number of HIV-infected infants has declined from 302 to 92 in that same period.

When we look at a subset of these children (those picked up by NYC DOH perinatal exposure surveillance at 22 hospitals), infection rates in children evaluated for HIV before 3 months of age declined from 20%-25% in 1992-1994 to less than 10% in1998- 2000. Infection rates began to decline even before 1994, when prophylaxis began. However, these are not population-wide data and the HIV status of many in our data base is still indeterminate.

However, when we look at state data on *all* HIV-exposed births in NYC in the last 3 years, we can confirm that the citywide transmission rate in 1999 is, in fact, an amazingly low 7% (58 out of 782 HIV-exposed births). Because of the intense follow-up and free PCR testing at state labs, the HIV status of children in this database remains indeterminate in only a few cases.

Successes in Prevention

There are several steps that can be taken to prevent perinatal HIV transmission:

- prevention of HIV infection in women
- quality care for HIV-infected women
- prenatal care
- prenatal evaluation for HIV
- prescription of antiretrovirals for perinatal prophylaxis
- delivery by elective cesarean section.

Data from our 22 pediatric HIV care sites in NYC (1996-1999) indicate that 5%–10% of HIV-infected pregnant women receive no prenatal care. An additional 10% get no prenatal HIV test, although that percentage is improving. Fifty percent of women in prenatal care got multiple ARVs during pregnancy in 1999; 15% got none; 25% got monotherapy with ZDV. We need to find out who the women in these last two groups are and why they did not receive optimal therapy.

If we look at antiretroviral use and infant HIV infection status from these same data, we note that use of ARV and ZDV prenatally plus intrapartum and neonatal ZDV resulted in a 1% infection rate in infants; and use of prenatal, intrapartum and neonatal ZDV resulted in a 6% infection rate. Infants who received neonatal ZDV only (started within 24 hours of birth) were infected at rates (12%) half those (24%) of infants not treated neonatally and whose mothers received no ARVs (V. Peters, et al. *8th Conference on Retroviruses and Opportunistic Infections*, February 2001, Abstract No. 703).

Use of cesarean section among HIV-infected women is also increasing in NYC (20% in 1996-1998; 38% in 1999). Chart review data indicate most of the increase is due to deliberate use of elective c-section for HIV prevention.

Can Mother-to-Child HIV Transmission Be Eliminated in NYC?

Elimination of perinatal HIV in NYC seems possible. Remaining obstacles include:

- lack of prenatal care
- HIV not identified before delivery
- ARVs not prescribed, not accepted, concerns about adverse effects
- ARV prophylaxis failures? (drug resistance, nonadherence or other causes)
- ongoing new HIV infection in women
- role of street drugs and alcohol, homelessness.

Looking more closely at available data (22 NYC pediatric HIV care sites) on the 5% of infants born to HIV-infected mothers in 1999 or 2000, no single obstacle can explain all of the infections.

Even with our best efforts, antiretroviral prophylaxis for perinatal HIV prevention might not be succeeding. Monica Nolan, an EIS officer with CDC's Division of HIV/AIDS Prevention, is examining apparent ZDV failures in children in the Pediatric Spectrum of Disease (PSD) study in NYC . We hope she will uncover data which can inform scientific monitoring of prenatal management to eliminate failures.

The diversity of the NYC populace contributes to obstacles in care and prevention. One third of NYC population is foreign-born and 49% of 1999 births were to immigrant mothers. Some immigrants are undocumented or lack health insurance. Differences in language and culture also make counseling and other communication very difficult.

Illicit drug use may also play a role in the ability of some women to obtain optimal care. Data from the Pediatric Spectrum of Disease study show how prevalent drug use is among HIV-positive mothers. Through 1988, injection drug use was common among drug-using mothers reported in PSD. After 1989, injection drug use began to decline, but mothers using other street drugs remained relatively constant. Among women who used any drugs, over a third had no prenatal care, compared with 7-12 percent of mothers with no history of drug use.

HIV seroprevalence by race and ethnicity show significant disparities, including among NYC women testing HIV-positive. NYS Department of Health data show a persistently higher percentage of Black and Hispanic women in NYC testing HIV-positive as compared with other racial and ethnic groups, although percentages in all groups have been declining over the last decade.

Risks for HIV in Women of Childbearing Age

The last data I will present underline the need for alliance between pediatric and adult HIV prevention. STD reports are one way to see evidence of unprotected sex. Since chlamydia became reportable in 1994, more than 20,000 cases have been reported in women each year in NYC. In 1999, 64% of these cases were in women 15- to 24-years of age, and only 31% in women older than 24.

Similarly, gonorrhea disproportionately affects young women. From 1993 through 1999, rates of gonorrhea in females aged 15-19 have generally been double the rates of males in that same age group and five times the rate of male and female gonorrhea in all age groups. In 1999, the rate for 15- to 19-year-old females in NYC was 799 reported cases per 100,000.

If we look at the percentage of HIV-positive women, by age group and year of delivery of their infants (for the period 1990–1999 in NYC), we note a decrease in all age groups, but this decrease is much less in women in the 15-19 and 20-24 year age groups. In addition, in a recent survey of young NYC

men (ages 23–29) who have sex with men, the mean number of lifetime partners was 17, with some reporting up to 2000 lifetime partners; 16.9% tested positive for HIV(32.9% of Black men and 14.9% of Hispanic men). While self-identifying as MSM, many of these men reported also having sex with women.

Conclusion

Perinatal HIV has been reduced and can be eliminated in NYC. To do that we must:

- first prevent HIV infection in women;
- implement innovative approaches to prenatal care;
- ensure universal prenatal HIV testing; and
- provide access to excellent HIV care for women.

Steps to eliminate perinatal HIV in NYC that are underway or planned include:

- *Personal*:
  - better focused public education (NYC project)
- *Social*:
  - improve availability of prenatal care
    - adapt clinic schedule and policy to eliminate waiting, allow walk-ins? longer hours
    - outreach to women in high-risk neighborhoods (NYS program)
- *Structural*:
  - increase prenatal testing
    - provider education (NYS project)
    - universal prenatal HIV testing (legislation or regulations).